Assignment No. 2.

Q.1. Write the Algorithm and draw the Flowcharts for following:

a) Print even numbers between 0 to 99.

→ Algo:-

step① : start

step② : i ← 0

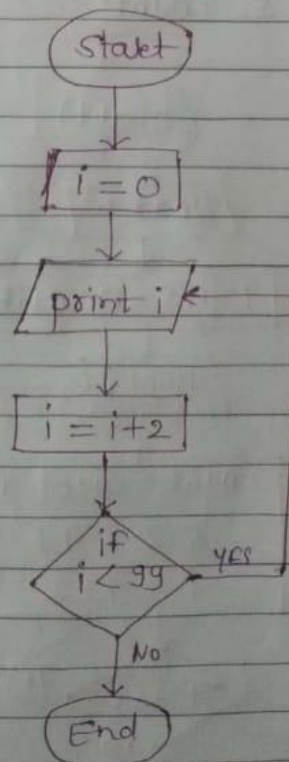step③ : print the value of i

step④ : i ← i+2

step⑤ : if (i < 99) then goto step③

step⑥ : End

Flowchart:-

b) Print odd numbers less than a given number. It should also calculate their sum and count.

→ Algorithm :-

step ① : start
step ② : Read n
step ③ : $i \leftarrow 1$, $s \leftarrow 0$ and count $\leftarrow 0$
step ④ : print i
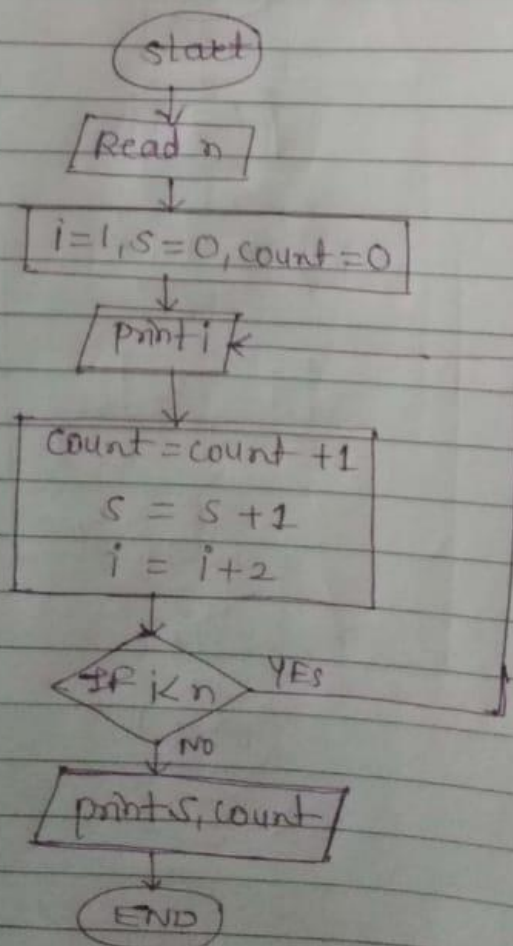step ⑤ : count $\leftarrow$ count $+1$
step ⑥ : $s \leftarrow s + i$
step ⑦ : $i \leftarrow i + 2$
step ⑧ : If $(i < n)$ goto step ④ else goto step ⑨
step ⑨ : print s, count
step ⑩ : End

Flowchart :-

O) Calculate average of 25 test scores.

→ Algorithm :-

Step ①: start

step ②: Sum ← 0, C ← 0

step ③: Read test scores S

step ④: S ← sum + S

step ⑤: C ← C + 1

step ⑥: If c ≤ 25 then goto step③ else goto step⑦

step ⑦: Avg ← sum/25

step ⑧: print avg

step ⑨: End

Flowchart :-

```
                    (start)
                       ↓
                 ┌──────────────┐
                 │ sum = 0, c = 0 │
                 └──────────────┘
                       ↓
                 ┌──────────────┐
                 │ Read test S  │←──────┐
                 └──────────────┘       │
                       ↓                │
                 ┌──────────────┐       │
                 │ Sum = sum + S │       │
                 └──────────────┘       │
                       ↓                │
                 ┌──────────────┐       │
                 │  C = C + 1   │       │
                 └──────────────┘       │
                       ↓                │
                    ◇ If c ≤ 25 ◇───────┘ NO
                       │
                      YES
                       ↓
                 ┌──────────────┐
                 │ Avg = Sum/25 │
                 └──────────────┘
                       ↓
                 ┌──────────────┐
                 │  Print Avg   │
                 └──────────────┘
                       ↓
                    (END)
```
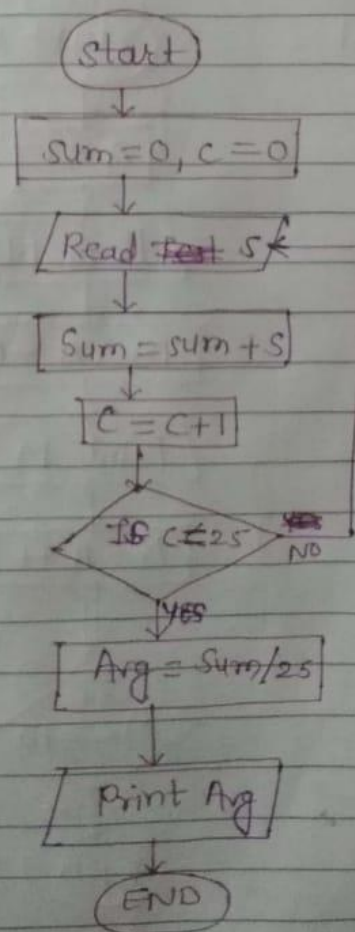
d) Print table of any number N (say 7)

→ Algorithm :-
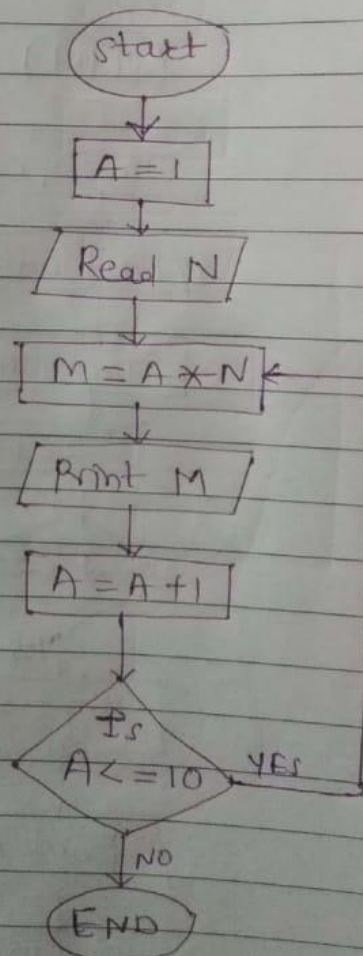step ① : start
step ② : let A ← 1
step ③ : Read N
step ④ : M ← A * N
step ⑤ : Print M
step ⑥ : A ← A + 1
step ⑦ : If A <= 10 then repeat steps ④ ⑤ ⑥ ⑦
else goto step ⑧
step ⑧ : End

Flowchart :-

e) Check if the given number is Prime or not.

→ Algorithm :-

step ① : Start

step ② : Read n

step ③ : set flag = 1

step ④ : if n == 1 then print "n is not prime number."
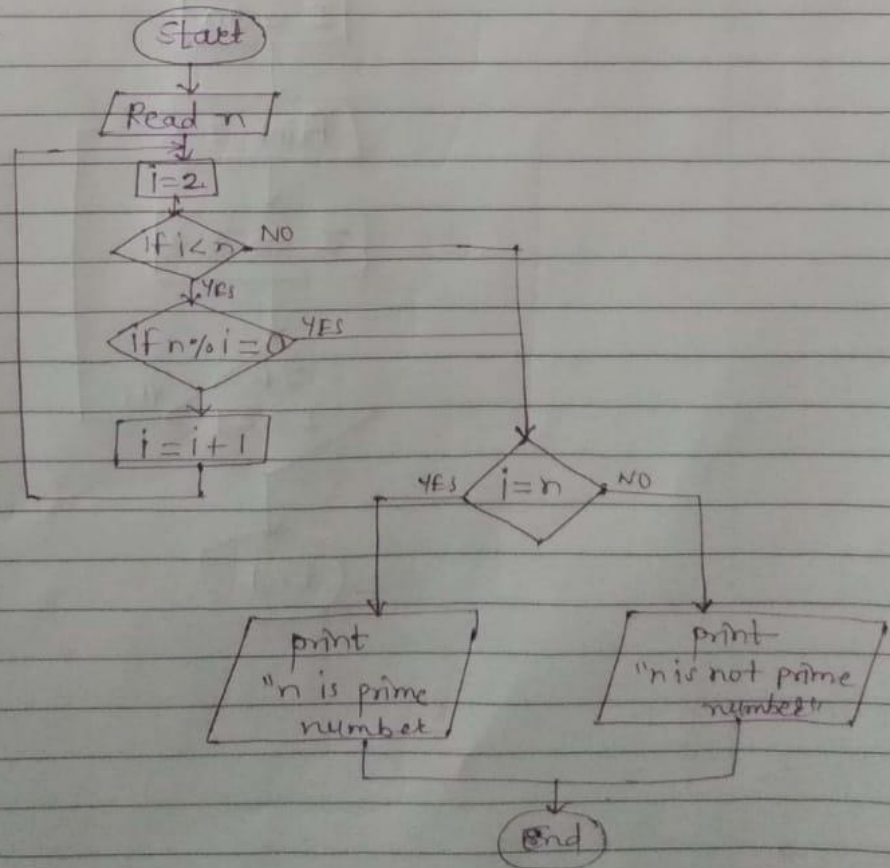goto step ⑧

step ⑤ : For i = 2 to n-1

step ⑥ : if n%i == 0 then
set flag = 1 and break
else goto step ⑤

step ⑦ : if flag == 1 then print "n is not prime number"
else print "n is prime number"

step ⑧ : End

Flow chart :-

f) Print odd numbers backward from 99 to 1.

→ Algorithm:-

Step① : start
Step② : let $I \leftarrow 90$
Step③ : Print I
Step④ : $I \leftarrow I-2$
Step⑤ : If $I >= 1$ then goto step③
else goto step⑥
Step⑥ : End

Flowchart:-

```
        ( Start )
            |
            ↓
      ┌───────────┐
      │  I = 90   │
      └───────────┘
            |
            ↓
      ┌───────────┐
      │  Print I  │←──────────┐
      └───────────┘           │
            |                 │
            ↓                 │
      ┌───────────┐           │
      │  I = I-2  │           │
      └───────────┘           │
            |                 │
            ↓                 │
         ◇ If                 │
       ◇ I>=1 ◇───YES─────────┘
            |
            ↓
        ( End )
```